

SEPTEMBER MEETING

TOUR OF UNIVERSITY OF CINCINNATI'S CENTRAL UTILITY PLANT

DATE: Thursday, September 28, 2006

PLACE : University of Cincinnati - 3001 Glendora Ave - (see map & parking info on Page 3)

TIME : 6:00 p.m. to approximately 7:30 p.m.

ABOUT THE TOUR: This month's meeting of the IEEE Cincinnati Section features a tour of the University of Cincinnati's Central Utility Plant. The plant was completed and put into commercial service in May 2004 and consists of two 12.5 megawatt (MW) combustion turbine generators which can operate on both natural gas and diesel fuel, two heat recovery steam generators capable of producing a total of 240,000 Pounds Per Hour (PPH) of 600 psi steam, at 750° F, a 24 MW steam turbine, two 150,000 PPH dual fuel package

boilers and 18,000 tons of chiller capacity. Since being put into service the plant has won numerous awards for emission reductions and energy efficiency including:

- 2005 International District Energy Association - System of the Year - <http://www.districtenergy.org/pdfs/NewsReleases/systemofyear2005release.pdf>
- 2005 Ohio Governor's Award for Energy Excellence
- 2005 Association of Energy Engineers - Efficiency Award
- 2005 EPA Combined Heat and Power - Certificate of Achievement

The UC power plant provides steam, chilled water, and power for the UC academic campus and along with the university's Eden Avenue plant provides utilities to the medical complex including: Holmes, University, Children's, and Veteran's Administration hospitals. The plant also serves the Hoxworth Blood Center, Shriner's Burns Institute, and the UC Medical Sciences Building.

The tour will be conducted by Mr. Ray Miller, Superintendent of Utilities for the University of Cincinnati. Ray began his career in power plant construction, operation and maintenance almost 30 years ago as a Field Service Project Manager for the General Electric Installation and Service Engineering Business Unit. Ray was responsible for the construction and start up of East Kentucky Power Co-op Spurlock Unit #2 - 510 MW, Dayton Power and Light's Killen Station Unit #2 612 MW, Texas Eastern Gas Transmission - Slaughter's Creek Gas Compression Station; and also was involved with numerous other installations, overhauls, and projects.

After leaving Field Service, Ray was a Plant Engineer/Supervisor at Avon Products, Plant Engineer and Maintenance and Production Manager for Cin-Made Corporation, Principle of Action Engineering - Project Management Consulting, and a Senior Project Manager - Cincinnati Milacron Advanced Manufacturing Systems Division.

Ray Miller joined the University of Cincinnati in 2002 as the Superintendent of utility operations for oversight of construction, commissioning and operation of the \$80 million plant. Also, Ray has served as an Adjunct faculty member of the College of Applied Science since 1988.

Please call the Cincinnati Section Voice Mailbox at **513-629-9380**, by **Noon, Tuesday, September 26, 2006** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number. You can also make a reservation by e-mailing our Arrangements Chair, Charlie Nash, at cnash@ieee.org.

Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses!!! Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

CHAIR'S MESSAGE

by Jim Everly, Section Chair

Welcome Back! The summer went quickly and I still need to plant grass seed and get the exterior of my house ready for winter.

The Cincinnati Section Executive Committee held a meeting in August and the committee has some interesting programs planned for this year. The September Section meeting features a tour the University of Cincinnati's Central Utility Power Plant. In addition, as part of the pre-tour meeting, the University of Cincinnati's College of Applied Science will announce a new two year associate degree in Power Plant Technology starting Autumn Quarter 2006.

As indicated last May, I am looking to add new positions to the Cincinnati Section Executive Committee. If you have any interest in serving the Cincinnati Section let me know. The committee meets about four times a year and is responsible for technical meeting and other activities concerning IEEE.

Also, I am always interested in elevation of Cincinnati Section members to the grade of IEEE Senior Member. Please contact me if you have an interest in upgrading your membership or serving the Cincinnati Section as a member of the Executive Committee.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

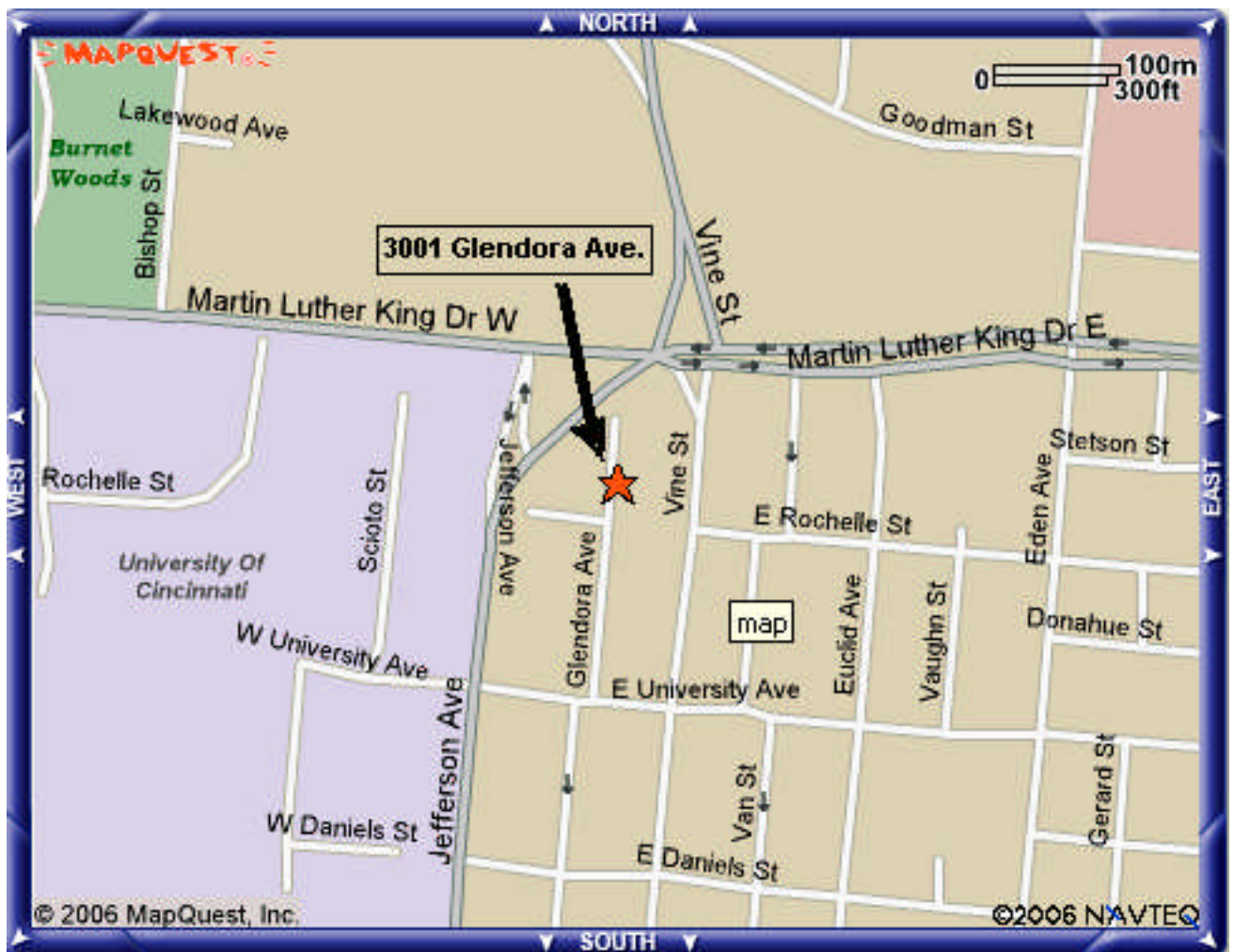
Craig A. Agne	John Grosheim	James M. McCollum
Eric J. Bulington	Christopher S. Hirschey	Dwight W. Moss
David J. Forcum	Robert F. Itell, Jr.	James Niemeier
Keith B. Frikken	Feng Jiao	John P. Trainor
Barbara D. Gannod	Matt Knollman	James D. Zimmerman

We wish to welcome these new members to the Cincinnati Section!!!

The Cincinnati Section would like to congratulate our newest Senior Members,

whose upgrade applications were recently approved.

If you are interested in upgrading your membership to Senior Member, please contact any member of the Executive Committee. You can also see our PACE Chair, Brian Resnick, or any other member of the Executive Committee immediately following any Section Meeting.



There is a small parking lot at the power plant on Glendora Avenue. If it is full, there is nearby street parking. The tour presenter, Mr. Miller, advises parking as closely as possible to the plant and to try to park in well lit areas.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

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Charles Stewart Ballantine

Sixty-five years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper by Stuart Ballantine on the topic of vacuum-tube detectors subjected to large signals. During his career, Ballantine made numerous contributions to the design of vacuum-tube circuits, measuring instruments, and acoustic devices. He was the author and co-author of sixteen PROCEEDINGS papers published between 1919 and 1934 and received the Morris Liebmann Memorial Award from the IRE in 1931. He also served on several IRE committees and was President of the IRE in 1935.

In his July 1929 paper, Ballantine noted that much work had been reported on the theoretical and experimental characteristics of vacuum tubes with small signals. He continued that the behavior of vacuum-tube detectors was more complex when large signals were applied, but that he had been working on the problem for several years and was ready to disclose his results. He explained how a designer could construct detection diagrams for specific tubes which greatly simplified analysis. He included a section on mathematical theory and described the experimental technique that he had used to verify his theory. He stated that he had used his method to design very linear detectors for commercial radio receivers being used by licenses of the Radio Frequency Laboratories.

Ballantine was born in 1897 in Germantown, PA and had become an amateur radio enthusiast by 1908. He served as a radio operator on ships during summer vacations from 1913 to 1915. He attended Drexel Institute and was employed as a radio expert at the Philadelphia Naval Yard during 1917-1920, where he was in charge of developing a radio compass for navigation. He published his first IRE paper in 1919 on the theory of thermionic amplifiers. During 1920-1921 he studied physics at Harvard University and then spent a year at the Radio Frequency Laboratories in Boonton, NJ, where he worked on radio broadcast receivers. In 1922, Ballantine published a book entitled Radio Telephony for Amateurs and was the recipient of the John Tyndall scholarship at Harvard during the 1923-1924 academic year. He conducted independent investigations of radio propagation and related topics from 1924 to 1927 and then returned to become Director of the Research Division of the Radio Frequency Laboratories.

Ballantine was President of the Boonton Research Laboratories from 1929 to 1934 and worked on the development of measuring instruments, including a logarithmic voltmeter and an automatic recorder for measuring frequency response. He also collaborated with Harold A. Snow on the development of variable-mu tetrodes for the reduction of distortion, which they reported in an IRE paper published in December 1930.

In 1934, Ballantine founded the Ballantine Laboratories, which he headed for the rest of his life. There he developed improved techniques for measuring the performance of microphones and loudspeakers. He invented a throat microphone that proved valuable to aircraft pilots and continued to work on high-quality radio transmitting and receiving equipment. He was awarded the Elliott Cresson Medal of the Franklin Institute in 1934 in recognition of his contributions to the theory of radio antennas. He received more than thirty U.S. patents for his inventions. He was a member of the IRE Board of Editors for several years and also served on the IRE Standardization Committee. Ballantine died in 1944.

*James E. Brittain
School of History, Technology, and Society
Georgia Institute of Technology*

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<http://ieee.cincinnati.fuse.net/>**

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IEEE NEWS

IEEE-USA PRESIDENT URGES CONCERTED, SUSTAINED ACTION ON ADOPTION OF "NEW INTERNET"

WASHINGTON (24 May 2006) -- Just as "visionaries" of the Age of Enlightenment in 18th century Europe pursued progress through rationality, the 21st Century's "New Internet" will "benefit the public good by balancing the needs of users and society," according to Dr. Ralph W. Wyndrum, Jr., IEEE-USA's 2006 President. Delivering a keynote address on 19 May to some 125 attendees at the Federal IPv6 Summit in Reston, Va., Wyndrum praised the development of the new Internet Protocol (IP) that will exponentially increase the number of assignable IP addresses on the Web. He cited advantages of the new protocol, known as IPv6, including these: simplified mobility, reduced network administration costs, and improved overall network efficiency.

The IEEE-USA president projected that IPv6 could lead to new jobs and serve as a stepping stone for the next "killer Web application." He cited as examples "Internet on demand" and "the development of new consumer devices," including appliances that can be controlled on the Web. According to Wyndrum, IPv6 "allows every device to have its own unique identity"; and the new protocol will allow for immediate notification each time personal bank accounts are charged, helping to transform e-commerce and online banking.

The IEEE-USA president noted that IPv6 is now a global product and other nations "are hard at work transforming the new Internet." He stressed that the United States must lead in setting standards for the new protocol. Wyndrum stated that the IEEE's "Standard for Wireless Access in Vehicular Environments" takes advantage of the enlarged space offered by IPv6, and that the new technology is important "to many of the IEEE's standards projects -- one we're open to exploring further."

With a recent Frost & Sullivan study projection that the Internet will exhaust the old protocol's -- IPv4 -- addresses by 2012, the IEEE-USA president called for a concerted and orderly transition to the new protocol. He pointed to the U.S. Office of Management and Budget mandate that all federal networks must be able to send and receive IPv6 packets by mid-2008, and that Lucent estimates it will need three more years -- until 2009 -- to convert its customer mobility applications to support IPv6.

Wyndrum concluded with another historical reference to the development of the telephone by one of the first IEEE members, Alexander Graham Bell. He contrasted Bell's almost accidental discovery while working on a hearing device for the deaf with the development of the new Internet. The IEEE-USA president said the new technology will "not be the product of a single person, organization or politician -- nor luck or serendipity," but will require a sustained, collaborative effort.

For more information on the IPv6 summit, go to <http://www.usipv6.com/>.

IEEE-USA President, in "New England High-Tech Journal," Says Permanent Immigration Better for U.S. Work Force than Expanding H-1B Program

WASHINGTON (5 June 2006) -- The permanent immigration of skilled scientists and engineers is better for the United States' capacity to innovate and meet high-tech work force demands than expanding the temporary H-1B program, IEEE-USA President Dr. Ralph W. Wyndrum Jr. wrote in an op-ed published today in "Mass High Tech: The Journal of New England Technology."

"Immigration-based admissions level the playing field for all workers, and ensure that America benefits from recruiting the world's best and brightest as future Americans, rather than training future competitors," Wyndrum wrote in the column titled, "H-1B program is Not Answer to Work Force Shortage."

Read the column at:

http://www.bizjournals.com/masshightech/stories/2006/06/05/newscolumn4.html?from_rss=1

The IEEE-USA president also writes about David Huber, a Chicago-area IEEE member who was hurt by the H-1B program. "Huber's experience is not unique," Wyndrum noted. "Thousands of U.S. citizens have been replaced by H-1B holders, often at lower wages."

Colleges, Universities, Professional Societies Contribute to "Service Learning"; Involve Engineering Students in Community Activities: "IEEE-USA Today's Engineer Online"

WASHINGTON (14 June 2006) -- At least 100 colleges and universities incorporate "service learning" into their engineering curricula in an effort to involve students in community activities," according to IEEE President-Elect Leah Jamieson, who is quoted in the June 2006 "IEEE-USA Today's Engineer Online."

In the "Today's Engineer" article, Dr. Jamieson defined "service learning" as "a method of teaching, learning and reflecting that ties community service with academic learning outcomes in the discipline, and is built on the principle of reciprocity." An example of service learning cited in the article is developing data management systems for social service agencies, such as Habitat for Humanity. According to "Today's Engineer Online," additional service learning programs have been undertaken with Engineers Without Borders (EWB) and Engineers for a Sustainable World. Such programs typically include faculty members mentoring students.

In February 2005, the IEEE was a major contributor to a \$25,000 United Engineering Foundation grant for EWB-USA's relief effort in Sri Lanka, following the December 2004 Indian Ocean tsunami. IEEE-USA also contributed \$5,000 for EWB-USA student recognition awards presented at the organization's international conference in February 2006.

In the article, titled "Wave of the Future," IEEE President-Elect Jamieson noted that most service programs have been undertaken in civil engineering. She singled out service learning as "a huge opportunity for the IEEE and for other professional organizations."

As reported in "Today's Engineer Online," for the current fiscal year, the National Science Foundation provides almost \$25 million for Engineering Projects in Community Service (EPICS), co-founded by Dr. Jamieson at Purdue University, and similar service programs. In addition, high-tech companies such as Microsoft, National Instruments and Hewlett-Packard have supported engineering service learning programs by donating equipment and/or software, according to "Today's Engineer Online."

IEEE President-Elect Jamieson, interim dean of the College of Engineering at Purdue in West Lafayette, Ind., was the lead speaker at a National Conference on Service Learning in Engineering, held in Washington on 24-25 May at the National Academy of Engineering (NAE). In February 2005, NAE honored the Purdue EPICS program with the "Bernard M. Gordon Prize for Innovation in Engineering and Technology Education."

To read the full "Today's Engineer Online" article on engineering service learning by former Associated Press Correspondent Barton Reppert, go to <http://www.todaysengineer.org/2006/Jun/service-learning.asp>

NEW ENGINEERING CAREERS BROCHURE UNVEILED FOR 11-13-YEAR-OLD STUDENTS, CHILDREN'S MUSEUMS

IEEE-USA has unveiled a new six-panel engineering careers brochure that is designed for 11-13-year-old, sixth-to- eighth grade U.S. students. Titled "My Science, My Math, My Engineering! How Am I Ever Going to Use This Stuff in the Real World?," the brochure: (1)lists courses youngsters should take to get ready for engineering; (2) shows how they can figure out "if engineering is interesting"; and (3) asks "what could *you* do if you were an engineer?" In one of the brochure panels, James Michener, the novelist and short story writer, is quoted: "Scientists dream about doing great things, engineers do them."

Some 20,000 copies of "My Science, My Math, My Engineering!" have been preordered by more than two-dozen U.S. children's museums. These include: The Exploratorium, in San Francisco; the Science Museum of Virginia, in Richmond; and the Buffalo Museum of Science. Large quantities have also been requested by organizations with K-12 student sci-tech enrichment programs, such as the Lawrence Livermore National Laboratory in Livermore, Calif.; and the U.S. Space & Rocket Center, in Huntsville, Ala.

Members of IEEE-USA's Precollege Education Committee, including a school teacher, drafted the text. And IEEE-USA volunteer members pretested the brochure for readability and design with students in the target age range. "My Science, My Math, My Engineering!" complements an earlier IEEE-USA publication aimed at high-school students, "Careers in Electrical, Electronics and Computer Engineering."

To see the new brochure for younger students, go to
http://www.ieeeusa.org/volunteers/committees/pec/Precollege_brochure.pdf

Copies can be obtained without charge by writing to IEEE-USA Communications Assistant Helen Hall at h.hall@ieee.org.

IEEE Mentoring Connection - an online program to foster mentoring relationships between IEEE members

Call for IEEE Mentors!

Opening 14 July 2006, IEEE is offering its members the opportunity to participate in an online program which will facilitate the matching of IEEE members for the purpose of establishing a mentoring partnership. By volunteering as a mentor, individuals use their career and life experiences to help other IEEE members in their professional development. As a mentee, you lead your partnership by selecting your mentoring partner from among those who have volunteered to serve in this capacity. We ask that you review the time and effort commitment to the program to ensure a successful mentoring partnership.

Presently, IEEE is offering potential Mentors, like you, the opportunity to enter the program first. IEEE has partnered with The Training Connection, a vendor that has developed a web-based mentoring program to facilitate the matching process. Participation in the program is voluntary and open to all IEEE members above the grade of Student Member.

If you are interested, please go to <http://www.ieee.org/mentoring> for information on the roles and responsibilities of each mentoring partner, the program, as well as additional information on time and effort commitments. To access the online program site visit the IEEE Membership Benefits page listed under Core Benefits "New for 2006" at <http://www.ieee.org/web/membership/benefits/index.html>. This will then take you to the online mentoring program site. We encourage you to take advantage of the IEEE network of technical professionals and sign up for the online mentoring program today.

If you have any questions, please contact Cathy Downer, IEEE Mentoring Program Coordinator, at c.downer@ieee.org

U.S. IT Infrastructure Not Adequately Prepared for Cyber Attacks, Says IEEE-USA

WASHINGTON (14 July 2006) -- Because our nation's information technology infrastructure is highly vulnerable to hackers, terrorists, organized crime syndicates and natural disasters, increased funding for cyber security research and development is needed, according to a recent position adopted by IEEE-USA.

"Because of society's complete reliance on information technology and cyber networks, all the critical infrastructures and networks are interdependent and interconnected," IEEE-USA stated. "A cyber attack on one sector's infrastructure may have devastating consequences to another sector. U.S. infrastructure is not adequately prepared to defend against such risks."

Nearly every aspect of life in the United States is tied to computers. Air traffic control systems, power grids, financial systems, public health records and military and intelligence cyber networks, among others, all depend on computer networks. According to IEEE-USA, core Internet protocols such as Internet routing, e-mail and end-user authentication are at risk of cyber attack.

To help mitigate the risk of attack, IEEE-USA recommends that Congress and the executive branch work with private industry to:

- * Authorize and appropriate increased and stable funding for cyber security research
- * Encourage and support cyber security technology transfer programs
- * Facilitate commercialization

- * Facilitate development and implementation of cyber security standards
- * Support cyber security education programs

“Not only has the government traditionally played an important role in financing such efforts, but IEEE-USA strongly believes that, without the government driving a long-term cyber security vision, industry will most likely continue to make only incremental advances and improvements based on short-term, market-driven and adverse risk factors.”

The position is accessible at <http://www.ieeeusa.org/policy/positions/cybersecurity.asp>.

Former Japan S&T Executive Director Cites Terrorism, Infectious Diseases as Emerging Threats at IEEE-USA-Co-Hosted Event

WASHINGTON (17 July 2006) -- Dr. Yukio Sato, former executive director of the Japan Science and Technology Agency (JST), told the Congressional Research and Development (R&D) Caucus that emerging threats such as terrorism and unknown infectious diseases are a “megatrend” in Japan. IEEE-USA co-hosted the 12 July Capitol Hill event.

Discussing the state of S&T policy in Japan, Dr. Sato also cited two other megatrends:

* A rapidly aging society in which the declining birth rate will aggravate the financial situation of the country’s pension system, while an increase in productivity will be required to maintain national capacity with a declining labor force

* As deregulation and privatization advance, a shift from a uniform and homogeneous society to a more competitive society, bringing with it discussions of expanding differences such as producing increased gaps in income

“As a friend, ally, and important trading partner to the United States, Japan’s competitiveness certainly benefits the United States, but it also challenges us to be better,” said Rep. Judy Biggert (R-Ill.), who chairs the R&D Caucus with Rep. Rush Holt (D-N.J.) “The reverse is true too; U.S. competitiveness challenges and benefits Japan. It only makes sense, then, that we understand each other’s strategy for remaining competitive, and learn from each other.”

The briefing was hosted by the United Engineering Foundation in collaboration with IEEE-USA, ASME, the American Society of Civil Engineers, the American Institute of Chemical Engineers, and the American Institute of Mining, Metallurgical and Petroleum Engineers.

The \$100 Laptop is Coming: “IEEE-USA Today’s Engineer Online” Article

WASHINGTON (21 July 2006) -- Some manufacturers Dr. Mary Lou Jepsen approached about producing and selling a laptop computer for \$100 laughed at her. Despite this chiding and disbelief, the One Laptop Per Child (OLPC) chief technology officer has persevered, and the \$100 laptop is on track to be shipped next spring.

Jepsen describes the OLPC program in “Working on the \$100 Laptop” in the July issue of “IEEE-USA Today’s Engineer Online.”

OLPC is a non-profit association dedicated to researching and developing a low-cost laptop to serve as an educational tool for children in the developing world. The cheapest laptops on the market today typically sell for

about \$499, a price completely out of reach for most of the world's children and their parents. The \$100 laptop has the potential to transform education in the world's poorest countries.

Jepsen writes that Billy Edwards, AMD's chief strategy officer "describes our design of the \$100 laptop as the first fundamental revisit of personal computer architecture since IBM launched the PC in 1981. Twenty-five years, and now, for the first time, we're redesigning the whole architecture — hardware, software, display — and we're coming up with some remarkable inventions and innovations."

The \$100 laptop, which will have online capability, will also have features that most typical laptops do not. These include instant on, three to four times the range of WiFi antennae, a hand crank to recharge the battery, one-tenth the power consumption, and a higher-resolution display.

"This is not a cost-reduced version of today's laptop," Jepsen writes. "It's an entirely new approach to the idea of a laptop."

To read the entire article, go to www.todaysengineer.org.

NEWS FROM IEEE EDUCATIONAL ACTIVITIES AND THE HISTORY CENTER (3rd Quarter 2006)

IEEE TEAMS WITH IBM TO LAUNCH TRYENGINEERING.ORG IN JUNE

IEEE and IBM have collaborated to launch a new website that combines interactive activities with information on careers in engineering. TryEngineering.org is designed to educate a variety of audiences about the different engineering disciplines and the impact engineers have on society. Targeted toward teachers, school counselors, parents and students, TryEngineering.org lets site visitors explore how to prepare for an engineering career, ask designated experts engineer-related questions and play interactive games. Tools for teachers include lesson plans and engineering projects as well as a list of student competitions and science and engineering-oriented summer camps.

The site, which was launched in June, includes a searchable list of accredited engineering programs in the U.S. and Canada, and will be expanded to include programs in other English-speaking countries as well as Germany and France. For more information contact Doug Gorham, Educational Activities, at d.g.gorham@ieee.org or +1 732 562 5483 or Allison Ickowicz at a.m.ickowicz@ieee.org or +1 732 562 5496.

IEEE VIRTUAL MUSEUM CHOSEN AS EDUCATIONAL AID FOR SAN ANTONIO STUDENTS

The San Antonio Independent School District (SAISD) has chosen excerpts from exhibits in the IEEE Virtual Museum to supplement a tutoring program serving over 750 students who are children of migrant workers. The exhibits will be burned onto CDs, which teachers can bring to the student's home for playback on a laptop computer. SAISD was particularly enthusiastic about the Virtual Museum material, stating, "The articles are so relevant and so dynamic," Migrant Department Coordinator Celia Boriack wrote to the History Center. "This is the kind of reading material that can open a discussion between the student and the tutor."

Check out Virtual Museum's review in Science magazine:
<http://www.sciencemag.org/cgi/reprint/312/5770/29d.pdf>.

LATEST ISSUE OF IEEE'S "THE INSTITUTE" IS NOW AVAILABLE AT

<http://www.ieee.org/theinstitute>

Included in this issue is the following:

- E-Cycling Made Easier: We all have a stake in protecting the environment, and that includes producers, users, and recyclers of electronic equipment. Governments around the world are pressuring users and producers into environmental virtue through regulations. But a new program, based on a new IEEE standard, aims to entice rather than coerce. Find out more at <http://bmsmail3.ieee.org:80/u/3649/>
- The Candidates Answer Questions: Declining U.S. membership, maintaining the IEEE's volunteer-led structure, and establishing national IEEE entities were among the issues considered by Lewis Terman and John Vig, the candidates running for 2007 President-Elect. The two presented their views at a June forum hosted by the Philadelphia Section. Read more at <http://bmsmail3.ieee.org:80/u/3650/>
- Time to Vote: The annual election ballot is due to arrive in IEEE members' mailboxes this month. In addition to the two candidates for 2007 IEEE President-Elect, 33 people are running in 14 contests in various IEEE divisions and regions, as well as in the IEEE Standards Association, IEEE Technical Activities, and IEEE-USA. Read more at <http://bmsmail3.ieee.org:80/u/3651/>
- Students Fast-Track Hybrid Race Car: Engineering students at Dartmouth College leave the stereotype of the slow-but-economical hybrid car in the dust with the high-performance hybrid race cars they've built. Find out more at <http://bmsmail3.ieee.org:80/u/3653/>
- Next Tech Insider Webinar Discusses Automotive MEMS: Time is running out to register for the 21 September IEEE Spectrum Online Tech Insider Webinar: Car Talk About MEMS. Listen to industry experts discuss automotive micro-electromechanical systems (MEMS) development and applications. Major market areas to be covered will include onboard communication circuits, tire-pressure sensors, and accelerometers. For more information or to register, visit <http://bmsmail3.ieee.org:80/u/3654/>
- Marketplace of Ideas: Borrowed Rules: In May, William Swanson, chief executive of Raytheon Co., publicly apologized and was docked approximately US \$1 million in pay by the company after it was revealed he had plagiarized 16 of the 33 rules in his popular 2004 book, Swanson's Unwritten Rules of Management. Was Swanson's punishment appropriate, too severe, or not severe enough? Weigh in at institute@ieee.org
- Dues to Increase in 2007: Basic IEEE membership dues will rise next year to US \$123. The \$4 increase in yearly dues is based on the U.S. rate of inflation as measured by the country's Consumer Price Index. Find out more at <http://bmsmail3.ieee.org:80/u/3656/>
- Games Engineers Play: Teenage boys are not the only ones interested in computer games. The U.S. Army, Hollywood, and artificial intelligence researchers are using gaming technology to attain serious results. Read more at <http://bmsmail3.ieee.org:80/u/3657/>
- Assessing the Risks of Contemporary Terrorism : Listen to IEEE Spectrum Radio to hear IEEE Spectrum editors Jean Kumagai and Harry Goldstein discuss technology and terrorism with experts in counterterrorism and international security at Stanford University's Center for International Security and Cooperation. Select "Assessing the Risks of Terrorism" at <http://bmsmail3.ieee.org:80/u/3659/>

- Magazine Examines Environmental Impact : The August issue of IEEE Power & Energy considers how energy impacts society, economics, and the world. The issue explores the challenge that energy development faces in South America due to environmental restraints, delves into how energy fuels China's growth, examines Europe's need for an effective energy policy, and more. Read the magazine at <http://bmsmail3.ieee.org:80/u/3660/>

Reports, Studies Shatter Myth that H-1B Visa Holders are Paid Same Wages as U.S. Citizens

WASHINGTON (6 September 2006) -- U.S. industry spokespeople say repeatedly that H-1B visa holders are paid the same wages as similarly qualified American citizens. Numerous studies and reports, however, have found this to be untrue.

Tata Consultancy Services (TCS) Vice President Phiroz Vandrevalla even admitted that his company enjoys a competitive advantage because of its extensive use of foreign workers in the United States on H-1B and L-1 visas.

“Our wage per employee is 20-25% lesser than US wage for a similar employee,” Vandrevalla said. “Typically, for a TCS employee with five years experience, the annual cost to the company is \$60,000-70,000, while a local American employee might cost \$80,000-100,000. This (labour arbitrage) is a fact of doing work onsite. It’s a fact that Indian IT companies have an advantage here and there’s nothing wrong in that. ... The issue is that of getting workers in the US on wages far lower than local wage rate.” (“US visas are not a TCS-specific issue,” Businessworld (India) magazine, June 2003)

IEEE-USA President Ralph W. Wyndrum, Jr. said proposals now before Congress to raise the H-1B visa cap should be scrapped until significant workforce protections for U.S. and H-1B employees are instituted.

“Not paying market wages to H-1B holders is unfair to both foreign and domestic high-tech workers,” Wyndrum said. “H-1B employees are being taken advantage of, and some U.S. workers’ salaries are likely suppressed by the influx of thousands of additional job competitors. The wage problem is one symptom of how deeply flawed the H-1B program is.”

Findings showing H-1B holders earning less than the market wages paid to U.S. technology workers include:

1) “Immigrant engineers with H-1B visas may be earning up to 23 percent less on average than American engineers with similar jobs, according to documents filed with the U.S. Department of Labor (DOL). Salary data from Labor Condition Applications (LCAs) lends credence to arguments that lower compensation paid to H-1B workers suppresses the wages of other electronics professionals.” -- EE Times (June 2006), which calculated average H-1B salaries from LCAs and compared them to the Bureau of Labor Statistics’ Occupational Employment Statistics survey of employers. See <http://www.eetimes.com/news/latest/showArticle.jhtml?articleID=189401976>.

2) “In spite of the requirement that H-1B workers be paid the prevailing wage, H-1B workers earn significantly less than their American counterparts. On average, applications for H-1B workers in computer occupations were for wages \$13,000 less than Americans in the same occupation and state.”

“Applications for 47 percent of H-1B computer programming workers were for wages below even the prevailing wage claimed by their employers.” -- Center for Immigration Studies report (Dec. 2005). See <http://www.cis.org/articles/2005/back1305.html> (under Key Findings).

3) “Some [H-1B] employers said that they hired H-1B workers in part because these workers would often accept lower salaries than similarly qualified U.S. workers; however, these employers said they never paid H-1B workers less than the required wage.” Government Accountability Office report (September 2003). See <http://www.gao.gov/new.items/d03883.pdf> (p. 4).

According to IEEE-USA Vice President Ron Hira, the concept of “prevailing wages” is worthless as a safeguard for U.S. and H-1B workers.

“Proponents of the H-1B program say that by law H-1B workers must receive prevailing wages, but this is a legal façade so full of loopholes that it is frequently gamed by employers to pay below-market wages,” Hira said. “This is another myth of the H-1B program, that prevailing wages are the same as market wages.”

A review of the DOL’s LCA database for FY 2005 shows some of the well-below-market wages employers have been certified to pay H-1B workers. For example, Teja Technologies received permission to pay a software engineer \$10,900. Infosys Technologies was authorized to pay a programmer analyst \$20,030. TCS was certified to pay a computer programmer \$20,571, and Syntel, Inc., was permitted to pay a computer programmer \$31,304.

Under law, U.S. employers have three options for determining an H-1B employee’s prevailing wage. According to the DOL, an employer can request a “prevailing wage determination from the appropriate State Workforce Agency;” use a “survey conducted by an independent authoritative source;” or use “another legitimate source of information.”

Despite the law’s intent, Hira enumerated a few ways companies circumvent the law’s prevailing wage requirements when hiring H-1B workers:

- 1) By selecting a survey source with the lowest salaries
- 2) By misclassifying an experienced worker as entry level
- 3) By giving the person a lower-paying job title than one reflective of the work to be performed
- 4) By citing wages for a low-cost area of the country, then sending an employee to a higher-cost area

One reason it is so easy for employers to underpay H-1B holders is because they know how to exploit the loopholes and have almost no chance of ever being investigated. Even if they were investigated, the loopholes are so large most of the employers would likely be found following the letter of the law. First, DOL’s automated review of LCAs is limited to looking for missing information or obvious inaccuracies; no human looks at the applications. Second, if a Department of Homeland Security (DHS) review finds that an H-1B worker’s income on the W-2 form is less than the wage on the original LCA, DHS does not have a way to report the discrepancy to DOL.

“It’s a self-policing system that is never actually checked,” Hira said. “The law itself is written in a way to invite exploitation. It should be no surprise that firms take advantage of the loopholes.”

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